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Original Article

Isolation and Molecular Identification of *Acanthamoeba* and *Naegleria* from Agricultural Water Canal in Qazvin, Iran

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Abstract

Background: Free-living amoeba (FLA) are widely distributed in different environmental sources. The most genera of the amoeba are *Acanthamoeba*, *Naegleria* and *Vermamoeba*. The most common consequences of the infections in immune-deficient and immunocompetent persons are amoebic encephalitis and keratitis. The aim of this study was to investigate the presence of *Acanthamoeba* spp. and *Naegleria* spp., isolated from the main agricultural water canal in Qazvin.

Methods: Totally, 120 water specimens were collected and later the specimens were cultured and cloned to identify positive samples. PCR amplification and sequencing were carried out to identify the isolated species as well as the genotypes of amoeba.

Results: According to morphological surveys, 41.7% (50/120) of water specimens were positive for FLA. Molecular analysis revealed that 68.6% and 31.4% of *Acanthamoeba* specimens were identified as T3 and T4 genotypes, respectively. Also, two species of *Naegleria* named as *N. lovaniensis* (57.1%) and *Naegleria* spp. (42.8%) were identified. The results of pathogenicity assays demonstrated that 38.5% of T3 and 61.5% of T4 genotypes of *Acanthamoeba* were highly pathogenic parasites.

Conclusion: The water flowing in the agricultural canal of the area is contaminated with potential pathogenic FLA, therefore, it is recommended that more attention to be paid towards proper treatment of water sources to prevent possible risk of the disease.